

What is claimed is:

1 1. In a diesel injection nozzle-and-holder assembly, a nozzle
2 comprising a nozzle body, a nozzle body chamber formed in said
3 body, a sac below said nozzle body chamber, upper parts of the
4 wall of said sac lying in an imaginary cylindrical surface, an open-
5 centered body seat at the bottom of the body chamber, lower parts
6 of said body seat lying in an imaginary conical surface that is
7 coaxial with said imaginary cylindrical surface, said imaginary
8 cylindrical and conical surfaces intersecting each other at an
9 imaginary circular intersection, a plurality of injection orifices in
10 said sac spaced below said body seat and opening from said sac to
11 the exterior of said injection nozzle, a valve extending through the
12 body chamber and having a bottom face including a conical face
13 portion generally complementary to said body seat and having a
14 given included angle, said valve being movable to a seated position
15 in sealing relation against said body seat to cut off fluid flow to
16 said sac, a spring urging said valve to said seated position, said
17 valve having a differential-area portion exposed to said nozzle
18 body chamber whereby the valve is urged upwardly from said
19 seated position through a given lift distance to a full-lift position,
20 said upward urging being by hydraulic pressure in said chamber

21 and being against the bias of said spring, an annular notch
22 extending from a first point in said body seat above said imaginary
23 circular intersection to a second point in said sac wall below said
24 imaginary circular intersection, said notch having a lowest wall
25 that is at a given angle-to-vertical where said lowest wall
26 approaches said second point, said nozzle, in said fully raised
27 position of said valve, providing a given minimum cross-sectional
28 flow area for fluid passing from said injection nozzle chamber to
29 said sac greater than that associated with an otherwise identical
30 nozzle that does not have such annular notching, the improvement
31 wherein said given angle-to-vertical of said lowest notch wall
32 where it approaches said second point is reduced to less than 60° ,
33 whereby sac cross-sectional areas that would have been bounded in
34 part by a lowest notch wall having an angle-to-vertical of 60° , and
35 which, of all parts of the cross-sectional area of the sac, would
36 have had relatively great sweep area radii with reference to said
37 nozzle's central axis, stand eliminated, and the percentage of
38 reduction of sac volume that is realized incident to such angle
39 reduction is higher than the percentage by which sweep area is
40 reduced.

1 2. A device as in claim 1 in which the angle-to-vertical of said
2 lowest notch wall is reduced to 45° or less.

1 3. A device as in claim 2 in which the angle-to-vertical of said
2 lowest notch wall approaches being as small as the angle-to-
3 vertical of said body seat at said first point.

1 4. A device as in claim 2 in which the angle-to-vertical of said
2 lowest notch wall is equal to the angle-to-vertical of said body seat
3 at said first point and said notch shape is that of a parallelogram
4 with two vertical sides and two sides having the same angle-to-
5 vertical as said body seat.

1 5. A device as in claim 2 in which the angle-to-vertical of said
2 lowest notch wall is smaller than the angle-to-vertical of said body
3 seat at said first point.

1 6. A device as in claim 5 in which the angle-to-vertical of said
2 lowest notch wall is sufficiently small that said lowest notch wall
3 is the only notch wall and the notch has the form of a chamfer.

1